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CLINICAL REVIEW

Internet addiction and sleep problems: A systematic review and meta-analysis☆

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SUMMARY

The pathological use of the internet – conceptualized as 'internet addiction' – might be crucial in initiating and increasing sleep disturbances in the community. While inconsistent evidence is reported regarding the association of internet addiction and sleep disturbances, the severity of this association remains unclear. This systematic review and meta-analysis were conducted to increase our understanding of the relationship between internet addiction and sleep disturbances. A systematic review was conducted through Scopus, PubMed Central, ProQuest, ISI Web of Knowledge, and EMBASE using keywords related to internet addiction and sleep problems. Observational studies (cohort, case-control or cross-sectional studies) focusing on association between internet addiction and sleep disturbances including sleep problems and sleep duration were selected. A meta-analysis using random-effect model was conducted to calculate the odds ratio (OR) for experiencing sleep problems and standardized mean differences (SMDs) for sleep duration. Eligible studies (N = 23) included 35,684 participants. The overall pooled OR of having sleep problems if addicted to the internet was 2.20 (95% CI: 1.77–2.74). Additionally, the overall pooled SMDs for sleep duration for the IA group compared to normal internet users was −0.24 (95% CI: −0.38, −0.10). Results of the meta-analysis revealed a significant OR for sleep problems and a significant reduced sleep duration among individuals addicted to the internet.

Introduction

Internet use has grown significantly in recent decades. According to statistics in 2018, there were around four billion internet users worldwide with North America having the highest percentage of the population using internet at 89.4% compared to other continents [1]. Most studies indicate that the majority of internet users are teenagers and young people, although the level of internet use among adults is also increasing [2–5]. Given the broad spectrum of internet users, there is a need to understand potential risks associated with internet use among the small minority of individuals that appear to display problematic or pathological internet use behavior [6].

Pathological or compulsive use of the internet (often conceptualized as 'internet addiction [IA]') has an inconsistent prevalence among different populations. Epidemiological studies have reported a significant variance in the prevalence of pathological internet use among adolescents and young people from 0.9 to 37.9% in Asia [7–10]. In the United States, it ranges from 0.3% to 8.1% [11,12], and in Europe it has been reported to be between 2% and

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